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The panicle resembles that of *P. proliferum*, but is a distinct and good species, to which I give the name of its earliest collector, the late Mr. E. Hall.

The May Apple (*Podophyllum*) presents several peculiarities in its development which are so interesting as to merit an explanation. The non-flowering-stem of this plant bears but one leaf, while the flowering-stem bears two leaves, the flower being between them. A section of the base of the flowering-stem reveals nothing peculiar, it is merely a continuation of the rootstock (Fig. 1). The section of the base of the non-flowering-stem, however, reveals a bud, which represents the continuation of the root-stock (Fig. 2). A careful examination shows a small slit at one side of the bud by means of which it has access to the air (Fig. 4) and a cross-section shows that it is formed by the overlapping of the two edges of the stem about the bud (Fig. 5). In a logitudinal section I find the bud-cavity to be placed quite near to the margin of the stem (Fig. 6). Upon examining the older nodes of the rootstock I find undeveloped buds (Fig. 7.) which are placed quite near to the margin of a scar which is pitted like a leaf-scar. In fact, the non-flowering-stem of the May-apple is only a leaf, the base of whose petiole encloses a bud. When two such leaves arise, as is not unfrequent, the bud is enclosed by the base of the inner, second leaf. As a rule, the life of *Podophyllum peltatum* is prolonged by the development of axillary buds into branches (Figs. 1, 2, 7, 8, *a*), because the terminal flowering-stem perishes and the terminal buds of non-flowering stems rarely develop (Fig. 7, *b*). In one abnormal specimen found, a lateral bud divided at its tips, neither branch being axillary to the other (Fig. 3). And here I would state what appears to me a remarkable fact: while the

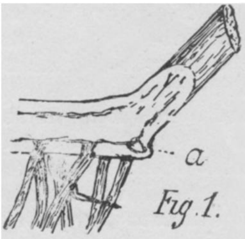


Fig. 1.

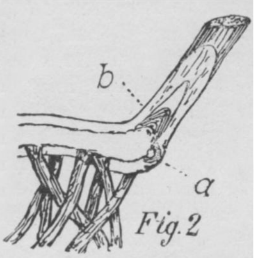


Fig. 2

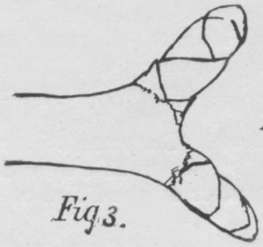


Fig. 3.

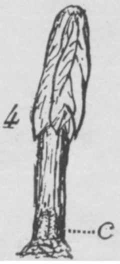


Fig. 4

axillary branches always produce long internodes, the terminal bud of a non-flowering stem, whenever it develops, produces only extremely short ones, so as to be practically almost none (Fig. 8). This is a case never found by me in any other plant.

The flowers of the May-apple are terminal. The flower-stems

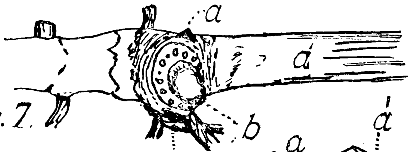


Fig. 7.

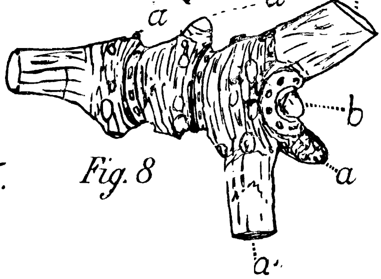


Fig. 8

Fig. 5.

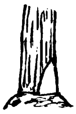
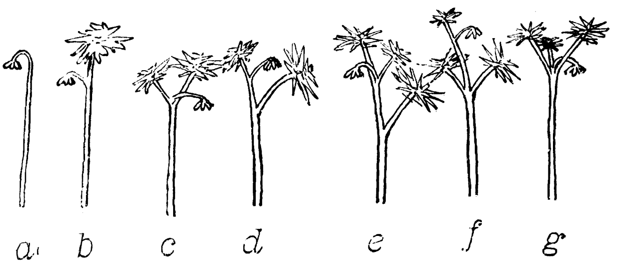


Fig. 6.

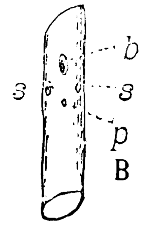
may be entirely destitute of leaves, as was a specimen found by me last spring, and which I sent to Prof. A. Gray at the time of discovery (Fig. 9). During one hour this spring I collected within the same woods six specimens of *b*, innumerable quantities of *c*, the usual form, sixteen of *d*, six of *e*, three of *f*, and one of *g*, a form in which

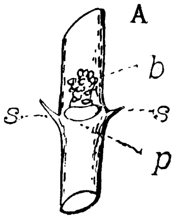
Fig. 9.



three leaves and the peduncle originated from the same point of the stem. In each case the peduncle of the flower bent away from the petiole of the last leaf; a fact which is explained by considering the leaves of the ordinary bifoliate type as not being truly opposite, but merely apparently so, from the close proximity of the one to the other. The leaves are alternate, and the peduncle bends from the petiole which properly belongs to it. The latter is always the smallest petiole of any developed on the plant.

The prickles of the Robinia have been explained as stipules, but never, so far as I remember, have those of *Xanthoxylum Americanum.* There are two prickles, one on either side of the petiole-scar, and, as a general thing, somewhat above the latter. Occasionally the thorns are scarcely developed, so that they can be traced only by the fibres belonging to them in the bark. These fibres, whether belonging to a developed or to a latent prickle, always run *into the wood*, showing them to be not a mere product of the bark; and their situation would define them as stipules. Prickles or thorns therefore may represent four different parts of a plant—the stem or a branch, the leaf or its ribs, mere emergences of the bark, and stipules. In Fig. A, *p* is a node, *b* is a branch, and *s s* are stipular prickles. Fig. B represents the bark removed to show the entrance to the vascular fibres into the wood.





DESCRIPTION OF FIGURES.—Fig. 1. Flowering stem. Fig. 2. Non-flowering stem. Fig. 3. Abnormally divided root-stock Fig. 4. Leaf sheathing at *c*. Fig. 5. Section of sheathing base, "*c*." Fig. 6. Vertical section. Fig. 7. The bud (*b*.) formerly sheathed by a leaf. Fig. 8. The sheathed bud developing for several years. *a*. Axillary bud. *a'*. Developed axillary bud or branch. *b*. Terminal bud.

Dayton, Ohio. AUG. F. FOERSTE.

Æcidium Bellidis.—In a note upon this fungus in the BULLETIN for March, 1884, p. 32., I stated that I had produced it from the teleutospores of *Puccinia obscura.* This *Puccinia,* however, occurs in the United States, specimens of it having been sent to me by Professor Farlow, who also informs me that the host-plant of the *Æcidium* is neither indigenous nor cultivated in gardens, except very rarely. It has been assumed by many persons, notably by some of those who write books upon botany, that the æcidial stage is absolutely necessary to the perpetuation of those species of uredines which possess it. This, however, is by no means true. Witness not only the presence, but profusion of the wheat-mildew (*Puccinia graminis*) in districts where the barberry is very scarce, as in the fen country of Norfolk and Lincolnshire in England. The same is even more strikingly shown by the ravages of this fungus upon the wheat crops in Australia, where none of the barberries is indigenous. Impressed by these facts, I have given this matter some special attention, for, living as I do upon the borders of the fen district it has been constantly brought under my notice. It has been thought that a single barberry bush could produce æcidiospores enough to infect half a county, all that was necessary being a few stiff breezes to waft the spores from the bush to the corn, miles away, in the same manner in which we have been taught to believe the spores of *Peronospora infestans* were blown from one end of Europe to the other